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ABSTRACT

The purpose of this study was to induce and reverse depressed moods using the Velten mood induction procedure. Forty-eight non-depressed university students (mean age, 32 years), were assigned to three groups. Depression-reversal subjects read negative then positive reversal self-reference statements. Depression-neutral group subjects read negative then neutral statements. Control subjects read neutral statements. Dependent measures included; the Multiple Affect Adjective Check List Depression Scale (MAACL-D) and writing speed. Both experimental groups had more depressed moods ($p<.0005$) and wrote fewer numbers ($p<.01$) following depression induction. The depression-reversal group no longer had depressed moods ($p<.0005$) following depression reversal. The three groups differed in mood levels after depression reversal on the MAACL-D, demonstrating effectiveness of the depression reversal procedure ($p<.00005$). Findings are consistent with Beck's (1967, 1973, 1980) cognitive theory of depression that thinking leads to moods. (Contains 35 references.) (Author)

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Depressed Moods in University Students: Induced and Reversed Using Self-Reference Statements

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Running Head: DEPRESSION: INDUCED AND REVERSED

Abstract

The purpose of this study was to induce and reverse depressed moods using the Velten (1968) mood induction procedure. Forty-eight, non-depressed university students (mean age, 32 years), were assigned to three groups. Depression-reversal subjects read negative then positive reversal self-reference statements. Depression-neutral group subjects read negative then neutral statements. Control subjects read neutral statements. Dependent measures included; the Multiple Affect Adjective Check List Depression Scale (MAACL-D) and writing speed. Both experimental groups had more depressed moods ($p < .0005$) and wrote fewer numbers ($p < .01$) following depression induction. The depression-reversal group no longer had depressed moods ($p < .0005$) following depression reversal. The three groups differed in mood levels after depression reversal on the MAACL-D, demonstrating effectiveness of the depression reversal procedure ($p < .00005$). Findings are consistent with Beck's (1967, 1973, 1980) cognitive theory of depression that thinking leads to moods.

KEY WORDS: self-reference statements; depression induction; depression reversal; moods; university students.

Depressed Moods in University Students:

Induced and Reversed Using Self-Reference Statements

Depression has often been referred to as the common cold of mental illness. Most individuals have experienced depression to some extent. Rosenhan & Seligman (1989) estimate that 25 to 30 percent of college undergraduates currently experience at least some of the symptoms of depression. Slife and Weaver III (1992) found that 4.5% of 358 introductory psychology students were severely depressed when measured by the Beck Depression Inventory. Given the suffering and serious consequences of depression, development of effective education and treatment appear essential.

Sad moods are the most prominent and pervasive emotional symptom in depression (Rosenhan & Seligman, 1989). Sad and happy moods have been experimentally induced. In numerous studies mood has been manipulated using mood induction procedures (MIP's) such as self-reference statements, personal recollection of past events, affect laden stories, and manipulation of success-failure tasks (for a review, see Goodwin and Williams,1982). Martin (1985) cited other MIP's that have been used (i.e., mood-suggestive music, hypnotic suggestion, manipulating facial expressions, and presentation of a mood-relevant story). Additionally, cognitive imagery to relive an experience, asking subjects to read sad sentences, exposure to elated and depressed confederates, giving subjects free gifts, giving cookies and finding money, and allowing subjects to win a computer game have all been used to induce moods (for a review, see Kenealy, 1986).

The most commonly used MIP, the Velten mood induction procedure (VMIP) was developed by Velten (1968) who sought to test a central tenet of cognitive therapies; that the interpretations people place upon events determine their moods. In Velten's study, mood level was measured as a function of manipulated self-reference statements. Subsequent VMIP researchers have likewise examined the relationship between self-reference statements and mood level. In attempting to verify the VMIP, researchers often have subjects read positive, negative, or neutral statements to determine their effects on mood. Typically, one of three groups reads neutral statements such as: "A large rose-growing center lies in Tyler Texas". Another group reads negative or depressing self-reference statements such as: "I'm discouraged and unhappy about myself". The third group reads positive or elating self-reference statements such as: "I feel great and healthier than I've felt in years". Goodwin and Williams (1982) argued that the VMIP is an effective manipulation of mood.

Previous findings indicate that the direction of an induced mood is congruent with the nature of the self-reference statements being read. If, for example, self-statements are negative, then depressed moods follow. When self-statements are positive, then elated moods follow (for a review, see Blaney, 1986). Some studies have shown that individuals can be induced to experience moods opposite their characteristic styles. In other words, subjects with characteristic depression can become elated and those with characteristic elation can become depressed using mood induction procedures (Leight & Ellis, 1981; Wetzler, 1985; Hale & Strickland, 1976). These studies, however, have had methodological limitations. By failing to induce, then reverse mood states, these studies have not

controlled for cause of pretreatment moods. Because they have not controlled for causative factors such as biochemical agents, inherited predispositions, environmental variables, and negative self-statements, the factors that were operating in the development and maintenance of depressed moods in these subjects remains unknown. Treatment planning without consideration of causes could have dire consequences in a clinical setting. Frost and Green (1982) compared waiting condition subjects with those receiving a removal strategy and showed that a removal strategy raised depressed moods brought on by depression induction. However, since they did not report pretreatment mood levels, it is uncertain that this removal strategy reversed depressed moods to a pretreatment level. Even though subjects receiving a removal strategy have less depressed moods than waiting condition subjects, they may still be experiencing some depressed moods relative to pretreatment mood levels.

If the goal is to help individuals suffering from depressed moods (that they have induced in themselves through their negative self-statements), then prior VMIP studies have had limited clinical applicability because they have not demonstrated that depressive states induced through negative self-statements are reversible to pretreatment levels. The current study expanded on the methods used in previous studies by inducing, then reversing a depressed mood state using self-reference statements and comparing pretreatment and posttreatment mood levels.

The purpose of this study was to attempt to reverse or eliminate depressed mood and behavior in university students once it has been induced using self-reference statements. Mood states were measured by the Multiple Affect Adjective

Check List Depression Scale (MAACL-D), while depressive behavior was assessed by the writing speed task.

Three major questions were asked and two hypotheses related to each question were posed. The preliminary question to be addressed was: Was depressed mood and behavior induced? Before it could be assessed that depressed moods had been eliminated, it was necessary to demonstrate that depressed moods existed prior to reversal. Hypotheses one and two relate to the first question. More specifically, these two hypotheses compare mean levels of depressive mood and behavior between the experimental groups and the control group on posttest 1 for each of the two dependent variables (MAACL-D and writing speed). Taken together and in the null form, these hypotheses were: There will be no difference at posttest 1 between the combined mean depression score of the two experimental groups and the mean control group depression score as measured by the Multiple Affect Adjective Check List Depression Scale and writing speed.

The second major question to be answered in this study was: Was depressed mood reversed? Once the question of depression existence is answered, then the issue of whether negative mood was reversed or eliminated could be addressed. Hypotheses three and four were designed to help answer the mood reversal question. More specifically, these hypotheses compared mean levels of depressive mood and behavior of the depression-reversal group for each of the two dependent variables (MAACL-D and writing speed). Taken together and in the null, these hypotheses were: There will be no difference in the mean depression posttest 1 and posttest 2 scores for the depression-reversal group as measured by the Multiple Affect Adjective Check List Depression Scale and writing speed.

The third question to be answered in this study was: Was mood reversal due to treatment? Although hypotheses three and four have addressed the mood reversal issue, it becomes essential to discover whether the three groups differ on posttest 2 in order to show that the mood reversal of the depression-reversal group from first to second posttesting was due to treatment, not simply to change over time. Taken together and in the null, these hypotheses were: There will be no difference in the mean depression posttest 2 scores among the three groups as measured by the Multiple Affect Adjective Check List Depression Scale and writing speed.

Method

Subjects

Subjects for the study were forty-eight (48) students from the University of Toledo selected from a larger pool of seventy (70) volunteers. Subjects were recruited from both the main campus and the two-year technical campus. They were invited to volunteer for an hour and a half study involving moods and self-talk. Sixteen subjects were assigned to each of three treatment groups.

The following characteristics emerged from this selection process: age range from 18 to 50 years (mean = 31.9), years of schooling from 12 to 20 (mean = 15.85 years), 17 undergraduates and 31 graduate students, 37 females and 11 males.

Prescreening

In the current study, subjects scoring a 10 or greater on the Beck Depression Inventory (BDI) were eliminated from further participation in order to minimize potential for increasing negative affect in already depressed individuals.

Of the volunteers selected to participate, the average BDI screening score was 3.3 compared to 16.5 for those volunteers not selected. On the BDI, a score of 10 and above has been used elsewhere to classify college students as depressed and as a criterion for initially excluding depressed subjects from experimentation involving VMIP depression induction (Cooper and Marshall, 1985). The BDI is a 21-item inventory that better measures trait than state depression (Boyle, 1979). The depression score is the sum of the weighted responses of items 1 through 21 with a maximum score of 63. (Beck, 1978).

Measures

Writing speed and the Multiple Affect Adjective Check List Depression Scale (MAACL-D) were used to assess mood and behavior. Writing speed is a number writing task developed by Johnson (1937) and used as a measure of psychomotor retardation. With the writing speed task, subjects are asked to write out numbers in descending order from 100 and are allowed one minute to do so. Writing speed was found by Johnson and by Velten and DeNike (1966) to differentiate elated from depressed individuals. Several investigators found that subjects given neutral treatment wrote more numbers than subjects given depression induction (Alloy, Abramson, and Viscusi, 1981; Hale and Strickland, 1976; Natale, 1977,1978; Natale and Hantas, 1982; Velten, 1968).

The Multiple Affect Adjective Check List Depression scale (MAACL-D) is an empirically derived scale and highly sensitive to transient conditions (Zukerman and Lubin, 1965). The MAACL-D is made up of 40 combined positive and negative adjectives (Zukerman, Lubin, and Robins, 1965). The depression score is obtained by summing the number of negative adjectives checked and positive

adjectives not checked. The MAACL-D is positively related to clinical ratings of depression and negatively related to cheerfulness ratings (Zukerman and Lubin, 1965).

Apparatus

All sessions were conducted in the Center for Applied Cognitive Science at the University of Toledo. The laboratory is a medium sized, quiet room. Soft lighting was provided by a table lamp. Each subject was seen individually and seated in a cushioned chair at a table with ample working space. The researcher was seated at a table located behind subjects.

Procedure

Subjects completed the Beck Depression Inventory prior to the day of experimentation. Before completion of the three premeasures, subjects were randomly assigned to either one of two treatment groups (the depression-reversal group and the depression-neutral group) or to a neutral control group. At the time the subject arrived for the study, the experimenter stated (same for all subjects): "Thank you for your willingness to participate in this study on self-talk and mood states. As you recall, you will be paid $5 as promised. Do you have any questions before we begin the session?" Subjects then completed the writing speed task, distance approximation task, and the Multiple Affect Adjective Check List Depression Scale (MAACL-D) as premeasures.

Phase one.

After completing the premeasures, all subjects read silently then aloud, instructions that prepared them to receive negative or neutral inductions. The

requirement of reading instructions aloud was adopted for two reasons. First, it helped to habituate subjects to the unusual situation of reading aloud in front of another person. Second, it provided some indication that the instructions were understood and taken seriously (Velten, 1967). All subjects then read either negative self-reference statements or neutral statements. All instructions and self-reference statements were typed, all capitals, on lineless 8" by 5" index cards and placed in order before the subject by the experimenter.

Those subjects assigned to the depression-reversal and the depression-depression groups read 50 negative self-reference statements designed to induce depressed moods. Previous research has shown that reading a full set of 50 statements has a greater impact on depression-induction than does reading only 25 negative self-reference statements (Schare and Lisman, 1984). Subjects read each card for twenty seconds before being signaled to go to the next card by the experimenter. Control group subjects read 50 neutral statements for twenty seconds each. The purpose of the neutral induction was to serve as a control for the possible effects of reading statements and experimental participation per se.

The writing speed task, the distance approximation task, and the MAACL-D were administered as posttest 1 after subjects had completed reading the first set of induction statements. The same instructions accompanied administration of these measures as during pretesting.

Phase Two.

Immediately after the first posttesting, all subjects read silently then aloud, instructions that prepared them to receive either positive reversal or neutral inductions as in Phase One. Depression-reversal subjects read 50 positive reversal

self-reference statements for twenty seconds each. These self-statements are polar opposites to the negative self-reference statements and were designed to move subjects in the elated direction on an elation-depression continuum. The depression-neutral group and the control group read 50 neutral statements for twenty seconds each. The neutral statements served as a control for the possible effects of reading statements and experimental participation.

The writing speed task, the distance approximation task, and the MAACL-D were administered after phase two to assess the effects of the statements on mood level. The same instructions accompanied the current administration of the dependent measures as those used in the pretest and first posttest. As the distance approximation task yielded no useful information, it will not be discussed further.

Debriefing.

At the conclusion of the administration of the second postmeasures, all subjects were debriefed. No subject was allowed to leave until the experimenter was certain that any negative experimental effects were eliminated. All depression-neutral subjects (given negative self-reference statements, then neutral statements, but no positive reversal self-reference statements) were debriefed by going through all 50 of the positive reversal self-reference statements. Positive reversal self-reference statements were expected to eliminate any depressed affect remaining in depression-neutral subjects. All subjects were observed and questioned about mood level. The experimenter asked the following question: "How are you feeling now as compared with when you began the experiment?" Any subject who reported feeling more depressed mood at the end of the study than at the beginning, was asked to read positive reversal self-reference statements until the reported mood

improved. All subjects had received the Informed Consent Form outlining alternatives in the event that assistance with any experimentally related problems was required. Personnel at the University of Toledo Counseling Center were aware of the nature of this experimentation and were available to provide back-up services if needed. It did not become necessary, however, to utilize this precaution.

Results

Hypotheses one and two of this study were tested for significance by t-tests for independent samples, by pooling the the two experimental group mean posttest 1 scores against the control group mean posttest 1 score on the two dependent variables; the MAACL-D and writing speed. Hypotheses three and four were tested by t-tests for dependent samples to find whether the difference in mean scores for the depression-reversal group posttest 1 and posttest 2 was significant for the two dependent variables; the MAACL-D and writing speed. Hypotheses five and six were tested for significance by One-Way Anovas among the groups at posttest 2 for the two dependent variables; the MAACL-D and writing speed. Multiple comparisons on significant one-ways were conducted with the Newman-Keul's test of multiple comparisons.

The MAACL-D

Group mean depression scores and standard deviations across trials (pretest, posttest 1, and posttest 2) for the MAACL-D can be seen in Table 1. The depression reversal group (DR), the depression-neutral group (DN), and the control group (C) had pretest mean depression scores of 6.69, 9.50, and 8.12 respectively and posttest 1 scores of 24.87, 24.00, and 11.87, respectively.

Insert Table 1 about here

The first hypothesis concerned with the MAACL-D (Ho I), stated that there would be no difference at posttest 1 between the combined mean depression score of the two experimental groups compared with the mean control group depression score as measured by the MAACL-D. Group mean depression scores across trials (pretest, posttest 1, and posttest 2) for the MAACL-D can be seen in Figure 1. From Figure 1, it can be seen that the experimental groups (DR & DN) had more depressed moods than the control group (C) at posttest 1. A calculated T-value for the experimental groups compared with the control group ($t = 5.55$, df 46, $p < .0005$) indicated a difference between the means. The null hypothesis of no difference between the means was rejected.

Insert Figure 1 about here

The second hypothesis concerning the MAACL-D (Ho III) stated that there would be no difference in the mean depression posttest 1 (24.87) and posttest 2 (6.62) scores for the depression-reversal group as measured by the (MAACL-D). Posttest 1 and posttest 2 mean depression scores and standard deviations for the

depression reversal group (DR) can be seen in Table 1. From Figure 1, it can be seen that the depression reversal group's (DR) scores increased markedly at posttest 1 but apparently dropped back to pretest levels at posttest 2. A calculated t-value for trials ($t = 5.59$, df 15, $p < .0005$) showed a difference between posttest 1 and posttest 2 for the depression reversal group on the MAACL-D. That is, the depression reversal group had less depressed moods on posttest 2 than on posttest1. The null hypothesis of no difference between the trial means was rejected.

The third hypothesis related to the MAACL-D (Ho V) stated that there would be no difference in the mean depression posttest 2 scores among the three groups as measured by the MAACL-D. A One Way Analysis of Variance yielded a significant effect $F(2,45) = 14.25$, $p < .00005$. The null hypothesis of no difference among the posttest 2 means was rejected. Significant results were obtained from the Newman-Keul's test when comparing the depression reversal group with the depression-neutral group, the depression reversal group with the control group, and the depression-neutral group with the control group. The depression reversal group had a lower mean score (6.62) than that of the control group (12.44) which was lower than the depression-neutral group mean score (16.75) on the MAACL-D at posttest 2 (see Figure 1).

Writing Speed

Group mean writing speed (WS) scores and standard deviations across trials (pretest, posttest 1, and posttest 2) are given in Table 2. The depression reversal group (DR), the depression-neutral group (DN), and the control group (C) had pretest mean writing speed scores of 48.50, 47.44, and 46.12. The depression

reversal group (DR) and the depression-neutral group (DN) mean scores fell to 42.25 and 42.94 respectively, while the control group (C) mean score raised slightly (48.87) on posttest 1.

Insert Table 2 about here

The first hypothesis concerned with writing speed (Ho II) indicated that there would be no difference at posttest 1 between the combined mean number of written numbers of the two experimental groups compared with the mean number of written numbers of the control group as measured by the writing speed task. Figure 2 displays the group writing speed (WS) means across trials. From Figure 2, it can be seen that the control group (C) had written more numbers than the experimental groups (DR & DN) at posttest 1. A calculated t-value for the experimental groups compared with the control group ($t = -2.59$, df 46, $p < .01$) indicated a difference between posttest 1 means. That is, pooled experimental groups, DR and DN had a higher mean score than the control condition. The null hypothesis of no difference between the means was rejected.

Insert Figure 2 about here

The second hypothesis concerning writing speed (Ho IV) stated that there would be no difference in the mean number of written numbers between posttest 1 and posttest 2 for the depression-reversal group as measured by the writing speed task. Posttest 1 and posttest 2 writing speed (WS) mean scores and standard deviations for the depression-reversal group (DR) can be seen in Table 2. Mean writing speed scores for the depression reversal group (DR) were 42.25 and 52.50 on posttest 1 and posttest 2. From Figure 2, it can also be seen that the depression reversal group (DR) wrote fewer numbers at posttest 1 and more numbers at posttest 2 than at the pretest. A calculated t-value for trials ($t = -5.09$, df 15, $p < .0005$) showed a difference between posttest 1 and posttest 2 for the depression reversal group (DR) on writing speed. That is, the depression reversal group wrote more numbers on posttest 2 than on posttest 1. The null hypothesis of no difference between the trial means was rejected.

The third hypothesis related to writing speed (Ho VI) stated that there would be no difference in the mean number of numbers written at posttest 2 among the three groups as measured by the writing speed task (WS). From Table 2, it can be seen that the depression reversal group (DR) had a mean writing speed score (WS) of 52.50 on posttest 2. The mean writing speed scores of the depression-neutral group (DN) and the control group (C) were 49.37 and 49.12 on posttest 2. A One Way Analysis of Variance indicated a nonsignificant effect among the posttest 2 group means $F(2,45) = .90$, $p < .41$. The null hypothesis of no difference among the posttest 2 mean writing speed scores was retained.

Discussion

Overall, five of the six hypotheses in this study were rejected at the .05 level of significance. All hypotheses involving the MAACL-D (hypotheses I, III, and V) as a dependent measure were rejected. Hypotheses II and IV which were concerned with writing speed were were also rejected and hypothesis VI, retained.

The depression-reversal group (DR) and the depression-neutral group (DN) pooled mean depression posttest 1 score was higher than the mean of the control group (C) on the MAACL-D (see Figure 1). Experimental groups (DR and DN) also wrote less numbers than the control group (C) on posttest 1 as evidence for depressive behavior (see Figure 2). It was, therefore concluded that depression induction had occurred in the experimental groups. It was important to demonstrate that depressive affect and behavior was induced because the rest of the study hinged on this factor. If depressed moods had not been induced during phase one, it would not have been possible to conduct the mood reversal procedure.

A major finding is that the depression-reversal group (DR) subjects had less depressed moods on posttest 2 than on posttest 1 as assessed by the MAACL-D (see Figure 1). This result indicated that depressed mood was reversed. This finding was further strengthened by the fact that the depression-reversal group had less depressed moods than both the depression-neutral group and the control group (C) as measured by the MAACL-D on posttest 2 (see Figure 1). If these means did not differ, it would have been assumed that some factor other than differing treatments was responsible for the mood reversal observed in the depression-reversal group from posttest 1 to posttest 2.

Of particular interest is the extreme mood fluctuation exhibited by the depression-reversal group (DR) throughout the experiment (see Figure 1). The depression-reversal group read positive reversal self-reference statements following the depression induction procedure. The mean score for the the depression-reversal group went from 6.7 at pretest to 24.87 at posttest 1 to 6.6 at posttest 2 (see Figure 1). Not only had depression induction taken place, but mood reversal had occurred as well. Alloy, Abramson, and Viscusi (1981), reported pretest means of 10.04 and 18.7 for trait elated and trait depressed subjects. The experimental groups in the present study (with a pooled mean of 24.44) had higher depression scores after depression induction than did trait depressives at the onset of the Alloy et al. (1981) study. Also, after receiving mood reversal, the depression-reversal group subjects (with a mean of 6.6) in the current study had higher elation scores than did trait elated subjects at the start of the Alloy et al. (1981) study.

The VMIP has been criticized for creating experimental demand (Larsen and Sinnett, 1991). What is the likelihood that mood changes in the current study were produced through demand characteristics of the experimental situation? It is possible that VMIP instructions and the relaxed atmosphere strengthened subjects' mood induction responses. Several studies have shown that subjects got themselves into mood states by simply being instructed to "try to feel the mood" while listening to mood suggestive music (Clark and Teasdale, 1982; and Sutherland, Newman, and Rachman, 1982). While it is possible that demand characteristics played a part in mood changes in the current study, the VMIP was likely the major contributor given the balance of VMIP research. Slyker and McNally (1991), for example, found that while some subjects respond to anxiety

inductions, different subjects respond to depression inductions. Since subjects responsive to demand should report spurious mood changes during both anxiety and depression induction, they interpreted this lack of shared variability between anxiety and depression subjects as evidence that VMIP mood changes are real. Kenealy (1986) concludes that while demand characteristics are implicated in mood changes, the VMIP produces some true mood shifts (for a review, see Kenealy, 1986). Larsen and Sinnett agree that demand characteristics add to an already significant mood induction effect in VMIP studies.

From Figure 1 it can be seen that the depression-neutral group had less depressed moods on posttest 2 than on posttest 1, giving evidence of some degree of mood recovery after reading neutral statements. This phenomenon of fading of induced negative memories over time is not surprising given that Schare and Lisman (1984) found that scores for induced negative moods returned to baseline after 24 hours. In fact, Teasdale and Fogarty (1979) found it prudent to have subjects read two mood induction cards after administration of each measure in order to maintain the induced mood.

Results indicated that the mean writing speed score of the depression-reversal group (DR) increased from 42.25 to 52.50 following the reversal phase. However, the three groups were found not to differ on posttest 2 as assessed by the writing speed task. Due to the fact that the three group mean writing speed scores did not differ significantly at posttest 2, it cannot be said that the reversed depressive behavior from posttest 1 to posttest 2 for the depression-reversal group on mean writing speed scores resulted from depression reversal treatment.

Due to professional and ethical considerations, those university students scoring high on a premeasure of trait depression were screened from participation in this study in order to prevent risk of furthering their depressive moods. It is possible that those with clinical depressions may respond differently to depression induction and reversal than the nondepressed individuals used in the current study. It may be the case that some depressions with primary etiologies other than faulty cognitions (e.g. biological abnormalities), may not respond as well as the depression-reversal group to reading positive reversal self-reference statements.

It is recommended that precautions are taken to debrief any subject who is involved in a mood induction procedure. In this study, various VMIP subjects were observed exhibiting depressive behaviors after negative mood induction such as: laying their heads down on the desk, talking much more quietly, and complaining about feeling tired and having headaches. The consequences of dismissing subjects without debriefing is that they would be returning to their daily lives with depressive moods and behavior present. In the current study, subjects with depressed moods were required to read instructions for positive reversal self-reference statements and the whole set of 50 positive statements before they were dismissed. Those who reported not to feel as positively as when they began, after reading the positive statements, were asked to continue reading until their moods were as positive as when they began. Because several subjects from the control group reported not to feel as positively as when they began, they were debriefed in the same manner. It is strongly suggested that every subject involved in mood induction research be fully debriefed prior to dismissal because it has been shown that they have more depressed moods as a result of mood induction procedures. It

appears, however, that debriefing works to reverse the effects of induced depressed moods.

Two subjects mentioned that they felt depressed in response to one of the positive statements: "I feel extremely fulfilled when I think about all the nice things I've done for my parents". There is still much to learn about how the VMIP affects subjects' moods. The potential exists that any given statement may activate subjects' negative memories or schemas and produce negative effects. Most neutral subjects reported extreme boredom and irritation at having to read the same set of neutral statements twice. Whissell and Leverque (1988) did find that neutral subjects appeared bored after induction. It is advisable that future VMIP researchers take precautions to insure that two different sets of neutral induction statements are available to be read by neutral subjects to guard against boredom.

While the present findings have shown that moods are alterable in a controlled setting, it is possible that moods associated with reactive depression can be changed in the clinical sphere as well. For instance, Riskind and Rholes (1985a,1985b) conclude that the VMIP successfully simulates the effects of mild, reactive, retarded depression. Clark (1983) summarizes that the VMIP has been found to be a valid analogue of naturally occurring moods because it has elicited behavioral changes found in earlier studies of natural mood variation. Several studies (Natale, 1978; Hale and Strickland, 1975; Velten, 1968; Cooper and Marshall, 1985) for example, have confirmed Johnson's (1937) finding that depressive subjects have more psychomotor retardation (as measured by writing speed) than do elated subjects. Given that the VMIP may induce a state analogous to natural retarded depression, this study provides support for Beck's cognitive

theory of depression. Beck (1967, 1973, 1980) states that negative and positive cognitions lead to depressed and elated moods. By focusing on specific depression-generating cognitions, individuals can lower their own moods. The current study validated an aspect of Beck's theory that has not been tested (that positive thinking can eliminate a depressed mood that was caused by negative thinking). In the present study, university students not only experienced depressed moods by thinking negatively, but also talked themselves out of negative moods by thinking positively. The procedures from this study could impact on clinical settings by establishing a method of depression-induction and reversal that could be used to educate clients about the consequences of their cognitions. By inducing a depressed mood and reversing it, clients are likely to benefit from the knowledge that they not only created their own depressed moods, but also eliminated them.

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TABLE 1

Depression-Reversal (DR), Depression-Depression (DD), and Control (C) Group Means and Standard Deviations on the Multiple Affect Adjective Check List Depression Scale

	Pretest		Posttest 1		Posttest 2	
Group	M	SD	M	SD	M	SD
DR	6.69	4.41	24.87	9.81	6.62	4.78
DD	9.50	6.61	24.00	5.82	16.75	5.54
C	8.12	3.44	11.87	6.07	12.44	5.78

TABLE 2

Depression-Reversal (DR), Depression-Depression (DD), and Control (C) Group Means and Standard Deviations on Writing Speed

	PRETEST		POSTTEST 1		POSTTEST 2	
GROUP	M	SD	M	SD	M	SD
DR	48.50	7.15	42.25	9.54	52.50	7.75
DD	47.44	7.56	42.94	6.07	49.37	6.34
C	46.12	6.48	48.87	7.97	49.12	9.36